55. (New) The method of claim 48-54, wherein said composition is formulated as a microparticle, a capsule, a liposome preparation or an emulsion.

C11 cont.

56. (New) The method of Claim 51-54, wherein said animal is a mammal or a bird.

57. (New) The method of Claim 51-54, wherein said composition further comprises an adjuvant.

REMARKS

A "marked-up" version of the specification is attached as Appendix A. The Specification is amended in Section 5 entitled "Brief Description of the Figures" at pages 18-19 to recite the appropriate SEQ ID identifiers assigned to the nucleic acid and/or amino acid sequences depicted in Figures 2, 3 and 6. It is noted that SEQ ID No.: 43 is indicated on page 18, in the description of Figure 6. SEQ ID NO.: 43 represents the amino acid sequence of the mature HMW protein and corresponds to amino acid sequence encoded by residues 466 to 3417 of SEQ ID. No.: 1. The specification is also amended at page 43 to correct the grammar and to insert a sequence identifier for SEQ ID NO.: 42 which is a portion of SEQ ID NO.: 3. Such amendments are formalistic, merely to comply with rules regarding sequence listings and add no new matter. The Substitute Sequence Listing is also corrected at residue 504 of SEQ ID NO.: 17 to recite the amino acid residue "ASN" instead of "ASP". Support for this correction is found in the specification at page 52, lines 2-7 which indicate (as corrected) that the "deduced amino acid sequence of the truncated fragment of HMW protein [encoded by plasmid pJJ36-J] is represented by amino acids 29 to 533 on Fig. 3 and is listed as SEQ ID

NO.: 17. Correction of SEQ ID NO.: 17 is consistent with Figure 3 as filed. A new substitute Sequence Listing, in computer readable and paper forms, is enclosed herewith together with a statement affirming that no new matter is added by the new Sequence Listing. It is noted that, for convenience, in the new Sequence Listing, the amino acids encoded by the nucleotide sequence presented as SEQ ID NO.: 1 have been represented in the listing. The amino acid sequence encoded by SEQ ID NO.: 1 is the amino acid sequence of SEQ ID NO.: 2. The amino acids encoded by the nucleotide sequences presented as SEQ ID NO.: 23 and 24 are submitted herewith as Exhibit B, Part 1 and 2.

The specification is also amended at page 39, to recite the accession number and/or information regarding deposit of certain microorganisms containing plasmids described in the application as filed and deposited in accord with Budapest Treaty requirements. Attention is directed to the specification at pages 51-53, in particular at page 52, line 34 through page 53, line 2, with respect to plasmid pJJ36-J, at pages 57-59, in particular at page 59, lines 7-10 with respect to plasmid pAH342, and at pages 74-78 with respect to plasmid pJJ701. Attention is directed to the Statement Regarding Public Availability of the deposits with attached Exhibits C1, C2 and C3, constituting the Receipts from the ATCC relating to the deposited organisms. No new matter is added.

The specification is amended at page 48, line 10 to recite the correct starting and ending nucleotide residues representing the nucleic acid sequence of SEQ ID NO.: 10 shown in Figure 2. This amendment corrects an inadvertent typographical error. The correction is obvious upon consideration of the original Sequence Listing showing SEQ ID NO.: 10 and Figure 2 as filed. No new matter is added.

The specification is amended at page 51, line 8, to recite the correct starting nucleotide residue representing the nucleic acid sequence of SEQ ID NO.: 11 shown in Figure

2. This amendment corrects an inadvertent typographical error. The correction is obvious upon consideration of the original Sequence Listing showing SEQ ID NO.: 11 and Figure 2 as filed. No new matter is added.

The specification is amended at page 52, lines 34 and 36, to recite the correct starting and ending nucleotide residues representing the HMW protein encoding nucleic acid in plasmid pJJ36-J and to recite the correct ending amino acid residue of SEQ ID NO.: 17 represented in Figure 3. These amendments correct inadvertent typographical errors. These corrections are obvious upon consideration of the original Sequence Listing showing SEQ ID NO.: 17 and Figure 3 as filed. No new matter is added.

The specification is also amended at page 57 to correct an inadvertent editorial error regarding SEQ ID NOS.: 15 and 16. The correction of this error is obvious upon consideration of the original sequence listing showing SEQ ID NOS.: 15 and 16 and Figure 6 as filed. No new matter is added.

The specification is amended at page 59, line 10, to recite the correct starting nucleotide residue of the open reading frame encoding HMW protein (mature form of HMW protein) in plasmid pAH342. This amendment is an obvious correction of an inadvertent typographical error. The correction is obvious in light of the specification in Example Section 9 at pages 57-60 which teaches how plasmid pAH342 was constructed. In particular, attention is directed to the specification at page 57, lines 31-35 which teaches that the forward primer used to obtain the nucleic acid encoding HMW protein contained sequences complementary to the nucleic acid encoding the first 10 N-terminal amino acid residues of the mature HMW protein listed as SEQ ID No.: 12. The amendment simply makes the specification consistent with the original sequence shown on SEQ ID NO.: 12 of the original Sequence Listing as filed. No new matter is added.

The specification is amended at page 61, line 17 to recite the correct range of molecular weight of the rHMP excised from the gel. The amendment corrects an inadvertent editorial error and is obvious in light of the teaching at lines 27-28 of page 61 and Formal Figure 4. No new matter is added.

The specification is also amended at page 39 to recite the accession number and/or information regarding deposit of certain microorganisms containing plasmids described in the application as filed and just recently deposited in accord with Budapest Treaty requirements. Attention is directed to the specification at pages 51-53, in particular at page 52 with respect to plasmid pJJ36-J and at pages 74-78, in particular at page 78 with respect to plasmid pJJ701. Attention is directed to the Statement [by the Assignee of record] Regarding Public Availability of these deposits as well as the availability of a deposited microorganism containing plasmid pAH432. No new matter is added.

Claims 21-22, 32-37 and 42-47 were pending in the application, these claims are canceled without prejudice. Applicants reserve all rights to prosecute the subject matter of cancelled claims in a subsequent divisional or continuation application.

New independent Claims 48-57 are added by amendment herein. Upon entry of the present amendment, Claims 48-57 will be pending. New Claims 48-57 are fully supported by the specification and claims as originally filed and add no new matter.

New independent Claim 48 recites a method of inducing an immune response comprising administering an effective amount of an adjuvant and an isolated *Chlamydia* HMW protein of *C. trachomatis, C. pecorum, or C. pneumoniae*, wherein said protein is encoded by residues 466 to 3417 of SEQ ID NO.: 1, residues 82 to 3036 of SEQ ID NO.: 23 or residues 85 to 3039 of SEQ ID NO.: 24. Support for this claim is found, inter alia, in the specification at page 15, lines 3-18; at page 20, line 25 through page 21, line 8, in original

Claim 30 etc. Specific support for the isolated mature *Chlamydia* HMW protein of three different serovars, i.e., serovars L2, F and B, comprising the protein encoded by the recited nucleotide sequences is found in the specification as filed, e.g., in the description of Figure 6 at page 18, line 30 through page 19, line 4 which indicates the starting amino acid residue, E, of each of the mature HMW proteins; in the text of Example 8 at page 54, line 26 through page 57, line 15; and in the Sequence Listing as originally filed. See, in particular, page 55, lines 8-12 which indicates that DNA encoding the mature HMW protein of B and F serovars was obtained and the amino acid sequence encoded was compared with the corresponding sequence of the mature HMW of the L2 serovar. This comparison is presented in Figure 6. See, page 57, lines 8-9. Attention is further directed to a comparison of the amino acid sequence of the HMW protein of the L2 serovar presented in SEQ ID NO.: 2 (and Figure 3) and the amino acid sequence of the mature HMW protein of the L2 serovar in Figure 6. This comparison makes clear that the mature protein depicted in Figure 6 is missing the first 28 amino acid residues of SEQ ID NO.: 2. Attention is further directed to Example 1 at page 34, line 1 through page 41, line 22 which describes the isolation and purification of mature *Chlamydia* HMW protein of the L2 serovar. See, in particular page 41, lines 17-21. Specific support for the adjuvant is found, inter alia, at page 22, line 4 through page 24, line 34 of the specification.

Dependent Claim 49 recites the method of Claim 48, wherein the *Chlamydia* HMW protein comprises an amino acid sequence of residues 29 to 1012 of SEQ ID NO.: 2, residues 29 to 1013 of SEQ ID NO.: 15 or residues 29 to 1013 of SEQ ID NO.: 16. Support is found as detailed above with respect to Claim 48.

Dependent Claim 50, recites the method wherein the *Chlamydia* HMW protein is produced using plasmid pAH342. Specific support is found in the specification at

page 38 at lines 25-26 and in Example 9 at page 56, line 17 through page 59, line 19, in particular, at page 58, lines 15-18. See also Exhibit C, Part C1 submitted herewith which together indicate that all requirements regarding deposit of a microorganism containing plasmid pAH342 have been met.

Independent Claim 51 recites a method of inducing an immune response, comprising administering an effective amount of an antigenic composition comprising a pharmaceutical carrier and an isolated recombinantly produced *Chlamydia* HMW protein of *C. trachomatis, C. pecorum, C. psittaci or C. pneumoniae*, wherein the HMW protein is encoded by a nucleotide sequence of SEQ ID NO.: 1, 23 or 24. Support for the method is found as indicated above. Specific support for use of the isolated recombinantly produced *Chlamydia* HMW protein encoded by nucleic acid of the recited sequence(s) is found, inter alia, in original Claim 32 which depends ultimately on original Claim 30. Specific support for the pharmaceutical carrier is found, inter alia, e.g., at page 19, line 20 through page 21, line 5 and original Claim 30. Additional support for the isolated recombinantly produced HMW protein encoded by the full length nucleotide sequence is found, e.g., at page 28, line 20 through page 38, line 17 and in the Examples, in particular Example 8 at page 54, line 26 through page 57, line 9.

Independent Claim 52 recites a method of inducing an immune response, comprising administering an effective amount of an antigenic composition comprising an isolated recombinantly produced *Chlamydia* HMW of SEQ ID NO.: 2, 15 or 16. Support for the method is found as indicated above. Specific support is found in the specification at pages 4-14, in particular, e.g., at page 5, lines 2-3, etc.

Independent Claim 53 recites a method of inducing an immune response, comprising administering an effective amount of an antigenic composition comprising,

wherein the HMW protein is obtained using plasmid pJJ701 obtainable from *E.coli* AR58 (pJJ701) having ATCC No. PTA-4123. Support for the method is as indicated above. Specific support for the HMW protein obtainable using plasmid pJJ701 is found in Sectoin 11 of the specification at pages 74-78, in particular, at page 78. Attention is also directed to the Statement [by the Assignee of record] Regarding Public Availability of the deposit containing plasmid pJJ701 and attached Exhibit C, Part C2.

Independent Claim 54 recites a method for inducing an immune response, comprising administering an effective amount of a composition comprising, an HMW protein encoded by a nucleic acid sequence which hybridizes under certain recited conditions to a DNA sequence of SEQ ID NO.: 1, 23, 24 or a sequence complementary thereto and encodes a protein recognized by an antibody that specifically binds a peptide comprising an amino acid sequence of SEQ ID NO.: 2, 15 or 16. Support is found in the specification, e.g., at pages 28-33, in particular at page 29, lines 8-25.

Dependent Claim 55 recites methods wherein the composition is formulated as a microparticle, capsule liposome or emulsion. Specific support is found, inter alia, in the specification at page 19, line 26 through page 20, line 17; at page 24, line 35 through page 25, line 2.

Dependent Claim 56 recites a method where the animal is a bird or mammal and Claim 57 recites that the composition further comprises an adjuvant. Support for Claim 56 is found in original Claim 34, and support for Claim 57 is found at page 15, lines 3-18; at page 20, line 25 through page 21, line 8, in original Claim 30 etc.

No new matter is added.

The Office Action alleges that the claims are in "improper Markush format" and "encompass multiple genus' molecules" with divergent structures that "fail to share the

characteristics of a genus, *i.e.*, a common utility and a substantial structural feature essential to the disclosed utility". The Office Action concludes that the claims define inventions which "are not proper species".

Applicants respectfully do not agree. As explained below, each of the *Chlamydia* high molecular weight (HMW) proteins, analogues and fragments thereof recited in the method claims shares a common utility and a substantial structural feature important to such disclosed utility. More particularly, each of the *Chlamydia* HMWs, analogues and fragments thereof produces an immune response to *Chlamydia* and each is recognizable by an antibody that specifically binds to a peptide comprising an amino acid sequence of SEQ ID NO.: 2, 15 or 16. Attention is directed to Figure 6 of the application which shows an alignment of the HMW proteins of three *Chlamydia* serovars which produce HMW protein of SEQ ID NOS.: 2, 15 and 16. Attention is further directed to Exhibit A submitted herewith. Exhibit A is the result of a CLUSTAL comparison of the amino acid sequences of amino acids of SEQ ID NOS.: 2, 15, 16 and the amino acid sequence of HMW protein encoded by plasmid pJJ701. The percent identity among the various sequences are summarized on page 4 of Exhibit A. A detailed review of Exhibit A clearly indicates that SEQ ID NOS.: 2, 15, 16 and the amino acid sequence encoded by plasmid pJJ701 are at least 95% identical to one another. Attention is further directed to the teaching of the specification at page 59, lines 7-10. As taught therein, plasmid pAH342 contains an open reading frame of HMW protein of *C. trachomatis* represented by nucleotides 446 to 3421, of Figure 2, *i.e.*, of SEQ ID NO.: 1 which encodes the HMW protein of SEQ ID NO.: 2.

Thus, amino acids of SEQ ID NOS.: 2, 15, 16, the amino acid sequence encoded by plasmid pJJ701 and the amino acid sequence encoded by plasmid pAH342 share significant structural identity and, as disclosed, have the same utility and all the recited

proteins, analogues and fragments are recognizable by a peptide at least 95% identical to SEQ ID NO.: 2. Hence, the genus in the recited Markush group is not improper. Further, each of the proteins and analogues are species of a common genus.

Restriction has been required under 35 U.S.C. §121 to one of the following groups:

Group I, Claims 21-22, 32-37 and 42-47 directed to methods of administration of high molecular weight (HMW) proteins of about 105-115 kDa; and

Group II, Claims 32-37 and 42-43 directed to methods of administration of fragments of said proteins.

Further restriction is also required under Section 121 to methods of administration of one of the following:

Groups A-R, each directed to a single designated amino acid composition of SEQ ID NOS. 2, 3, 15, 16, 17 and 25-37. The Office Action alleges that each of the inventions, designated as A-R, constitutes a separate invention because "each of the polypeptides has unique structural features which require a separate search".

Further it is asserted that the "inventions indicated as A-R differ in structure and function as they are composed of divergent amino acids and are differentially capable of stimulating immune responses."

Applicants respectfully traverse the requirement with respect to election among Groups A-R to the extent that such election requires election among amino acids of SEQ ID NOS.: 2, 15, 16 and the amino acid sequence of HMW protein encoded by plasmid pJJ701. Attention is again directed to Exhibit A submitted herewith. As detailed above, amino acids of SEQ ID NOS.: 2, 15, 16 and the amino acid of the HMW protein encoded by

plasmid pJJ 701 are at least 95% identical. Hence, a search of one of these sequences necessarily encompasses a search of the others.

In order to be fully responsive, if the Examiner does not agree, Applicants elect with traverse, to prosecute Group I directed to use of *Chlamydia* HMW protein and elect Group A having amino acid sequence of SEQ ID NO.: 2. Claims 51, 52 and 55-57 to the extent directed to use of a protein comprising amino acid SEQ ID NO.: 2 read upon the elected group. In addition, Claim 53 directed to the use of the HMW protein encoded by plasmid pJJ701 reads on the elected group since as shown in Exhibit A, this protein is 99.4% identical to the amino acid sequence of SEQ ID NO.: 2. In addition, Claims 48-50 to the extent directed to use of a protein, i.e., the isolated mature *Chlamydia* HMW protein, comprising about 97% of SEQ ID NO.: 2 also read upon the elected invention. With respect to Claim 54 directed to use of a protein encoded by a nucleic acid that hybridizes under specifically recited stringent conditions to a nucleotide sequence of SEQ ID NO. 2, 15 or 16 and which protein is cross-reactive with an antibody that specifically binds to an amino acid sequence of SEQ ID NO. 2, 15 or 16, it is submitted that this claim also reads upon the elected invention. Applicants reserve all rights to prosecute non-elected subject matter in a continuation or divisional application. Applicants reserve rights to Petition the Commissioner regarding the restriction requirements.

As indicated above, a Supplemental Information Disclosure Statement with PTO-1449 and References AW to AX are submitted herewith. It is respectfully requested that all references cited in this Supplemental Information Disclosure Statement and the

Information Disclosure Statement submitted on September 21, 2001 citing references AA-AV be made of record in the file.

Respectfully submitted,

Date May 1, 2002

31,232

Geraldine F. Baldwin (Reg. No.)

PENNIE & EDMONDS LLP
1155 Avenue of the Americas
New York, New York 10036-2711
(212) 790-9090